

NEURAL NETWORK FOR AEROELASTIC ANALYSIS

ABSTRACT OF THE DISCLOSURE

A system and method of performing aeroelastic analysis using a neural network.

Input parameters, such as mass and location, contributing to aeroelastic characterization are determined and constrained. A model of a structure to be analyzed can be constructed. The model can include a number of locations where the input parameters can be varied. The aeroelastic characteristic of the structure can be analyzed using a finite element model to determine a number of output characteristics, each of which can correspond to at least one of a plurality of input samples. A neural network can be generated for determining the aeroelastic characteristic based on input parameters. The input sample/output characteristic pairs can be used to train the neural network. The weights and bias values from the trained neural network can be used to generate a non-linear transfer function that generates the aeroelastic characteristic in response to input parameters.

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